**GLOBAL WARMING & DISAPPEARING RAINFORESTS MARKING SCHEME.**

**Part A: Loss of forest**

We are just beginning to appreciate the huge biological value and diversity of the rainforest. Is it too late?

This line graph shows the millions of hectares of rainforest in the world over the last two centuries.



**C 3-4 v**

**C 3-4 iv**

1. Complete the table below by estimating values from the graph:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | 1800 | 1850 | 1900 | 1950 | 2000 |
| Rainforest Area (in millions of hectares) | 2900 | **2800** | **2700** | **2500** | **2000** |

1. In the year 1800, 2900 million hectares of rainforest existed. Estimate what fraction of this rainforest had been destroyed in the next 200 years.

**C 1-2 i**

1. Write the fraction found in b. as a percentage.

**C 1-2 i (2 d.p)**

1. What other mathematical fact or facts can you interpret from the graph on page 3?

(Choose from words like *increasing, decreasing, rate, faster, slower, than* in your

answer and use a number fact.)

**C 3-4 i Suggested responses:**

**The area of rainforest is decreasing at an increasing rate or**

**The area of rainforest is decreasing over time but the rate of decrease is not constant, it is increasing.**

1. Using the graph, complete the 2nd column below for 1950 to 2000

|  |  |  |  |
| --- | --- | --- | --- |
| Year | 1900-1950 | 1950-2000 | 2000-2050 |
| Decrease in Rainforest Area | 200 | **500** | **1080** |
| Percentage decrease from previous year |  |  | **54%** |

1. How many times greater was the percentage decrease of rainforest from 1950-2000 than from 1900-1950?

**C 3-4 ii**

**It was 2.7 times greater than the previous time period.**

1. Describe how you would find the area of the rainforest in 2050 if the decrease of rainforest continues in the manner found in the previous section.

**D 1-2 i I would find what 2.7 times greater than 20% is.**

**Then, to find the decrease, I would find 54% of 2000**

**To find the area of rainforest left I would subtract this amount from 2000. million ha.**

Also, find the predicted area of rainforest left in 2050 and explain your calculations. Add this information to the table above.

**C 3-4 iii (see answer and table above)**

What assumptions have you made in making this prediction?

**D 3-4 i Suggested responses:**

**Have assumed that the rate of decrease of rainforests will continue decreasing at the same rate.**

**Have assumed that the original data was correct. Etc.**

1. Add your prediction and extend the graph on page 3.

**C 3-4 iv See graph**

**Part B**

*Originally, there were 1.55* x *107 square kilometres of tropical rainforests. As a result of deforestation, only 6.73* x *106 square kilometres of rainforests remain.*

*A slice of rainforest the size of a football field (5930 m2) is destroyed somewhere in the world every second.*

1. Here is a scale drawing of the block which contains our school. Use the scale given to calculate the area of this block in square metres.

|  |  |
| --- | --- |
|  | **C 1-2 ii**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Area of trapezium**  **or rectangle + triangle**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

1. Describe the process you used to calculate this area.

**D 1-2 ii or R 3-4 ii Measured lengths, determined the scale, converted the measurements and calculated the area.**

1. Using the data in part B, compare the area of the school to the area of rainforest destroyed each day.

**D 3-4 iii**

**Area destroyed each day =**

**i.e .9 times the school area is destroyed each day.**

1. By considering how long our forests will last, reflect on your finding so far.

**D 3-4 iv Suggested response:**

**Approx 1/5 of the area of the school is destroyed every second. If the school were covered with rainforest it would last less than 5 seconds.**

**How long will the world’s rainforests last? The rate of decrease is increasing. How can we change this?**

1. Some experts believe the rate of deforestation is in fact 15 million hectares per year.
2. Graph this information on your graph on page 3 from the year 2000 using a different coloured pen than you used in part (h).

**C 3-4 v (see graph)**

**(Note: Year 2100, 500 million hectares left.)**

ii. From your graph in i), predict when our forests will disappear.

**C 3-4 vi Approx. 2130**

iii. Explain why the two graphs are different? Justify your answer using mathematical terminology and notation.

**C 3-4 vii or C 5-6 i**

**In the first graph the rate of decrease in each time period is changing. Whereas, in the second graph, the decrease is constant, 15 million hectares each year.**

**Part C**

Write a 150-word article for a magazine that is popular with teenagers about the decreasing size of the world’s rainforests. Make sure your article has a headline, introduction, body of the investigation and conclusion. You should also include your reflection based on the finding within this paper.

Make sure you use proper mathematical terminology and notation as well as give explanation, justification and suggestions for improvements.

**D 5-6 i or ii depending on depth of argument and presentation of article.**

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**Look for a headline, introduction, body and conclusion.**

**Mathematical terminology and notation should be used.**

**The arguments should be aimed at teenagers and convincing.**

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**C 5-6 ii Based on impressive use of mathematical language and communication throughout the paper.**